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ern volcanoes of Iceland is introduced by way of illustration. The eruptive vents and the intrusive bodies, as sills and bases, both basic and acid, are also described.

The work closes with an account of the subsidences and dislocations of the plateaux and the effect of denudations. The final chapter consists of a brief summary together with the following general deductions: The distribution of the centers of volcanic activity has been along the western side of the country in a north and south line. The persistency of volcanic activity in this region and its restriction to particular localities are some of its most marked features. The sites of volcanic vents in Britain do not seem to have been determined by any obvious structures in the rocks now visible. Volcanic phenomena cannot be regarded as mere isolated and incidental features in the physics of the globe. They are intimately connected with profound terrestrial movements. They have been essentially uniform since the beginnings of geological time. In extent and rigor the earliest eruptions of which we have records did not differ in any important respect from those of the present time. However volcanic energy has not manifested itself uniformly throughout geological time. There have been periods of maximum and of minimum effectiveness. The character of the volcanic rocks and the general sequence of their eruption have been the same with slight modification for all the periods of activity in this region.

J. P. IDDINGS.

The Submerged Valleys of the Coast of California, U. S. A., and of Lower California, Mexico. GEORGE DAVIDSON, A.M., PH.D., Sc.D. (Member of the National Academy of Sciences, etc.), Proc. Calif. Acad. Sci. Third Series, Geology, Vol. I, No. 2. With Nine Plates. San Francisco, 1897.

This paper gives a brief description of the Pacific coast from the southern extremity of Lower California to the Strait of Fuca. The general character of the coast, south of Cape Mendocino, is bold and rocky, reaching considerable elevations within a few miles of the shore. These coastal ranges are broken by valleys and plains of varying width which may or may not correspond to the submarine depressions described.

Bordering the coast from about Cape Mendocino southward there is generally a submarine platform, having an average width of ten miles,

and extending to the 100-fathom curve. Beyond this platform the descent is usually rapid, 2000 fathoms being reached in from 35 to 100 miles from the shore.

In this 100-fathom platform the submarine valleys are found, heading either close to the shore or only a short distance out, and extending to a depth of from about 100 to at least 600 fathoms. These valleys vary largely in direction, form, and character of the bottom. Four valleys are found off the coast of Lower California and seventeen are described from the California coast. They are most numerous near the southern end of the state, and near Cape Mendocino, where four of considerable size are found within a stretch of twenty miles. These four are peculiar in heading under the highest parts of this strip of coast, while the majority of the channels are opposite valleys or openings in the coast ranges. All of the valleys are described in some detail and are well shown by submarine contours on the accompanying maps. North of Cape Mendocino no submarine valleys have been noted with the exception of one indicated near the mouth of the Columbia River.

Although this paper is of importance to geologists, no direct attempt is made in it to give the geological bearing of the facts stated. One assumption, which is open to criticism, is made by the author in using the term "submerged" where he formerly used "submarine," to describe these valleys, since it is doubtful whether all of them can be considered as submerged channels. The studies of the present writer on the submarine topography of a part of the California coast have led him to the conclusion that no general statement can be made as to the origin of these valleys. They may be due to one or more of three causes—either (1) they are structural, due to faulting or folding; or (2) they are due to the forces of subaërial erosion, and therefore are strictly "submerged valleys;" or (3) they may possibly be due to subaqueous erosion in delta deposits. Under which of these heads a given valley should be placed must be determined by a special study not only of the submarine features but of the topography, stratigraphy and structure of the neighboring land area, and possibly also of the characters of the shore-currents at that point.

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